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71 Applicant:
Createchnic Development AG, Dietlikon, CH

74 Representative:
Jeck, A., Dipl.-Ing., Patent attorney, 7141 Schwieberdingen

72 Inventor:
Dubach, Werner, Maur, CH

54 A two-component plastic cover assembly for solid and flexible containers

The cover assembly consists of a filler nozzle (10) and a screw cap (20). The filler nozzle (10) consists of a tube section (11) with a flange (12). The outside thread (13) is fitted at the top end of the filler nozzle. A valve cone (16) is held in place at the center of the filler tube (10) using the webs (15). The screw cap (20) has an inside thread (22) that matches the outside thread (13) of the filler nozzle (10). The cover surface (23) is fitted with a cylindrical and central discharge tube (24). When the screw cap (20) is screwed on, the bottom end (25) of the discharge tube (24) is pushed onto the valve cone (16) of the filler tube (10). To seal the two components against each other, the top end of the filler tube (10) has concentric wall (17), in which case the ring wall (26) of the screw cap (20) rests tightly against it.

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Patent claims

1. A two-component plastic cover assembly for solid and flexible containers, **characterized by** a filler nozzle with thread and a device for attachment to the container, as well as a screw cap with a thread that matches the thread of the filler nozzle (10), in which case a valve cone (16) is held centrically in the filler nozzle with the help of the webs (15), and by a cover (20) that can be unscrewed and is fitted with the central discharge tube (24), whose end (25) that projects inward when the cover (20) is screwed together points to the valve cone (16) in such a manner that the valve cone (16) pushes in a sealing manner on the end of discharge tube (25) when the device is fully screwed together.
2. A cover assembly in accordance with patent claim 1, characterized by the fact that the filler nozzle (10) is double-walled at least at the upper region facing the screw cap (20), in which case the outside wall has an outside thread, and that the screw cap with an inside thread has ring-shaped and centrally arranged ring wall (26) arranged at an inward offset, whose outside diameter matches the inside diameter of the inside wall of the double-walled (17) filler nozzle.
3. A cover assembly in accordance with claim 2, characterized by the fact that the height of the ring wall (26) is lower than the thread length of the inside thread (22) of the screw cap (20).
4. A cover assembly in accordance with claim 1, characterized by the fact that a handle (4) can be attached to the filler nozzle (20).
5. A cover assembly in accordance with claim 4, characterized by the fact that a flange (12) is provided as attachment device on the outside of the filler nozzle (20) and that a ring groove (19) is provided in the vicinity of the flange, into which is pressed a carrying handle (4) consisting of a plate (5) with a central opening (40), whose diameter matches the diameter of the ring groove (19) at the filler nozzle (20), and that an opening (6) of the carrying handle (4) is arranged at the two opposite ends of the plate (5).
6. A cover assembly in accordance with claim 5, characterized by the fact that a concentric groove (41) runs around the opening (40) of the plate.
7. A cover assembly in accordance with claim 5, characterized by the fact that the plate has annular ring sections that project into the opening and behind which are located radially and outward-pointing openings to permit a spring-like connection for the annular ring sections when placing the unit on the filler nozzle (20).

Description

This invention concerns a two-component plastic cover assembly for solid and flexible containers.

Plastic bags and plastic containers are known in the field of camping for storing water and for using them to supply the content in a metered manner.

Such containers are generally fitted with two covers. The upper cover, in the as-used position of the container, serves filling purposes, while the lower cover, again determined in the as-used position, is used for a metered discharge of the content. In that regard, the filler cover consists of a filler nozzle with outside thread, of a flange to connect it to the plastic container as well as of a screw cap with an inside thread. The second lower cover is generally fitted with a valve with a rotating tap. When the container is a plastic bag, often onlt one cover is used, since the container adjusts itself to the decreasing volume when water is removed and there is thus no need to have a following air flow. When only one cover is used, it is generally a simple rotating

cover consisting of a filler nozzle with outside thread, a flange to connect it to the plastic bag as well as a screw cap with inside thread. However, such a cover does not permit the water to be metered, since only two positions are available, i.e., fully open or fully closed.

The task of this invention consists in the development of a cover assembly of the type described earlier that can be used to fill a container or to meter its content, permits a cost-effective manufacture, has many uses and is simple to handle.

This task is solved with a two-component cover assembly with the characterizing features of patent claim 1.

Such a cover assembly may be manufactured from only two injection-molded plastic components and is thus suitable for mass production. The container can be filled by simply and fully removing the cover. To achieve a metered discharge of the content, one simply unscrews the cover a little, in which case the angle of rotation is proportional to the discharge rate, i.e., very much like a conventional water faucet.

A direct sealing effect between filler nozzle and screw cap by way of the thread can be realized only with great precision and using a suitable plastic material. This difficulty can be overcome, for example, by making the filler nozzle double-walled at least in the top region that points to the screw cap, in which case the outside wall exhibits an outside thread, and by providing a central, ring-shaped ring wall in the screw cap with an inside thread that is installed offset toward the inside, serves as a floating ring seal and exhibits an outside diameter that matches the inside diameter of the inside wall of the double-walled filler nozzle.

The handling of the unit may be simplified when a carrying handle can be attached to the filler nozzle.

Further advantageous design forms are indicated in the respective claims.

The drawings show an advantageous design form that is attached to a plastic bag and is explained in the following description.

The following is shown:

Figure 1 shows a schematic representation of a full plastic bag with the cover assembly in accordance with the invention and with a carrying handle.

Figure 2 shows a section through the filler nozzle with outside thread;

Figure 3 shows a top view of the same filler nozzle shown in **Figure 2** with a partial view of the carrying handle;

Figure 4 shows a section through one-half of the screw section of the cover assembly and

Figure 5 shows a section through one-half of a closed cover assembly.

When empty, the full plastic bag 1 shown in Figure 1 exhibits approximately a square form. Cover 2 is attached at the diagonal point of intersection of bag 1. Weld 3 runs along a center line from both sides toward the cover assembly. When full, plastic bag 1 exhibits the form shown in Figure 1. Carrying handle 4 with two openings is attached at cover assembly 2.

Cover assembly 2 consists of two separate components, i.e., a filler nozzle 10 and a screw cap 20. Filler nozzle 10 is shown as a section cut through the center in Figure 2 and as a top view in Figure 3. The main elements of filler nozzle 10 consist of tube section 11 and a terminal bottom flange 12 as the attachment device. The top half of the filler nozzle 10 is fitted with outside thread 13. Ring-shaped shoulder 14 limits the bottom end of outside thread 13. Valve cone 16 is maintained in a central position in filler nozzle 10 with the help of connections that run radially toward the inside and exhibit the form of webs 15. The lower part of the valve cone is cylindrical. Webs 15 run radially between the cylindrical section of valve cone 16 and the bottom section of tube section 11. Although the radially running webs are located precisely in the

section plane, they are shown as an elevation to better read the drawing. Radial webs 15' running perpendicular to the drawing plane are shown as a dashed line. Due to the temperatures that occur during the injection-molding process, it may make sense to curve webs 15.

Filler nozzle 10 is double-walled in the area of outside thread 13. The relatively large differences in the wall thickness in the area of thread 13 lead to an unevenness due to material-related shrinkage and it is thus impossible to guarantee a sufficient sealing effect. However, inside and concentric wall 17 exhibits a uniform wall thickness and is thus very much suited to achieve a sealing effect.

Beaded ring 12 is located above flange 12 and outside of filler nozzle 10 that defines ring groove 19 together with flange 12. This ring groove 19 serves to receive carrying handle 4 to be pressed-in at a later time. Carrying handle 4 has plate 5 with an opening, whose outside diameter matches the outside diameter of the filler nozzle in the area of ring groove 19. Opening 6 of carrying handle 4 is arranged at two opposite sides of plate 5.

Foil 7 of plastic bag 1 is welded to the surface of flange 12. The areal welding of foil 7 with flange 12 yields a strong connection.

Screw cap 20 is shown in the form of a one-half section in Figure 4 and together with the filler nozzle in Figure 5. At the lower cylindrical section 21, screw cover 20 is fitted with inside thread 22. Inside thread 22 of screw cap 20 matches outside thread 13 of filler nozzle 10. Inside thread 22 extends only over approximately the upper half of cylindrical section 21 of screw cap. The cover surface runs in the shape of a cone upward to central discharge tube 24. Central discharge tube 24 runs through screw cap 20 and projects inward to just above the lower end of inside thread 22. Lower edge 25 of central discharge tube 24 is slightly conical, thus approximately exhibiting the angle of the valve cone. The outside diameter of central discharge tube 24 approximately matches the diameter of valve cone 16.

Screw cap 20 contains a central ring-shaped ring wall 26, offset to the inside, whose outside diameter matches approximately the inside diameter of concentric wall 17 of filler nozzle 10. This ring wall 26 serves to seal screw cap 20 against filler nozzle 10. To achieve this effect, ring wall 26 may run outward in a slightly conical manner or, as shown in the example, may be fitted with terminal ring-shaped bulge 27 to the outside. As described above, the double-wall construction of filler nozzle 10 guarantees a high sealing effect.

Together with ring wall 26 of screw cap 20, inside concentric wall 17 of filler nozzle 10 forms a very precise floating ring seal. The height of ring wall 26 is lower than the height of inside thread 22. The purpose of this arrangement can be described as follows; When screw cap 20 is removed to drain the content of the hose bag, the initial flow is light and increases with further opening of the cover until the valve is fully opened. The quantity of the drained fluid does not increase when the unscrewing continues. When the unscrewing continues further, the point at which ring wall 26 no longer rests in a sealing manner against concentric wall 17 of filler nozzle 10 will be reached. The liquid is now pushed-out through the non-sealing thread between screw cap 20 and filler nozzle 10 and the user is thus warned that the screw cap will fall off when the unscrewing continues.

The attachment of a carrying handle at plastic bag 1 is costly and requires much effort. Furthermore, the strength of the hose bag does not permit a purely point-like attachment of a carrying handle. Accordingly, it makes sense to combine the carrying handle with the plastic cover assembly in accordance with this invention. This is achieved in the manner described above, in which case plate 5 of carrying handle 4 is pressed into ring groove 19 of filler nozzle

10. However, this requires a certain flexibility in the area of opening 40 in plate 5. This can be achieved, for example, with ring groove 41 arranged around opening 40 in a concentric manner.

A further solution that is not shown in the drawing provides for the plate to be fitted with annular ring sections that project into the opening. In the assembled condition, the annular ring sections would be forced into ring groove 19 of filler nozzle 10. Radially arranged slots pointing to the outside must be provided behind the annular ring sections to allow the annular ring sections to flex radially to the outside when the unit is placed on the filler nozzle.

The cover assembly in accordance with the invention can be used for flexible containers such as a plastic water bag as a military provision as well as for solid containers. Plastic bags fitted with a cover assembly in accordance with the invention may be stored empty for many years, since the cover assembly does not use any seals or sealing rings that may become ineffective over the years. Material-related form changes that can never be completely avoided when dealing with plastic materials occur equally at filler nozzle 10 and screw cap 20 and, since no other materials are used, the form remains the same and the sealing effect provided by the cover assembly remains intact.

With respect to an application for solid containers, filler nozzles that form a part of the container or those using other attachment devices than the flange shown here may be coinsidered. The first solution is particularly suited for plastic cans for wine, liquid fertilizers, liquid soap, distilled water, etc. However, such cover assemblies can also be used for bottle-like containers.

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Createchnic Development AG 8153 Dietlikon

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FIG. 1

FIG. 2

FIG. 3

FIG. 4

FIG. 5